

FOCUSED GRADUATE EDUCATION: AN INVISIBLE BUT REAL COMPETITIVE EDGE

Dr. Roland D. Kankey, Dr. Jan P. Muczyk, and Col Neal M. Ely, USAF

The future mission of the Air Force will be diverse and complex. Advanced technology will play an increasingly prominent role; a smaller force must accomplish more. To support this mission, our acquisition corps must be intellectually capable, well educated and trained. Focused graduate education will be essential to sustain this effort.

The Air Force has long recognized the value of quality education, as is evident from the following axiom: “Success in war depends at least as much on intellectual superiority as it does on numerical and technological superiority” (Department of the Air Force, 1992). In this era of right-sizing and trying to do more with less, the oft-uttered phrase “work smarter, not harder” seems to underscore the importance of education. In other words, the Air Force’s competitive edge in the future, both on the battlefield and in system acquisition, will depend in a large measure on that part of the human anatomy that rests on the shoulders.

For those of us in the field of acquisition, this would appear to be particularly applicable given the direction in which the Air Force (and for that matter every ser-

vice) is headed. In the words of the former Secretary of the Air Force, the Honorable Sheila E. Windall, and the previous Chief of Staff, General Ronald R. Fogleman, the Air Force faces a period of profound change.¹ Although it is easier to explain the past than to predict the future, there are some assumptions that can reasonably be made about certain aspects of this change.

In the future, the activities involved in executing the Air Force’s mission (which includes equipping and training) will become more diverse and complex, and may involve operations and acquisitions that are novel and nontraditional. While the Air Force (and the Department of Defense [DoD]) of the future will most likely be smaller, based on the experience of the past few years the tempo of operation will likely be faster paced and less predictable

than in the old Cold War environment. Forces may be deployed more frequently, and under the new Air Expeditionary Force concept, they will probably be deployed in smaller, nonstandard, unit-equipped deployment packages (Fogleman, 1996). Advanced technology, in the form of weapon systems, information management, etc., will play ever more prominent roles, and in all cases, we in acquisition will have to provide reliable, affordable, and state-of-the-art equipment and information systems to support the warfighter. All these elements are consistent with the Air Force's new strategic vision of "global engagement" (Secretary of the Air Force, 1996).

As the operational tempo increases, enormous pressures exist to reduce defense spending in concert with deficit reduction and budget balancing. Yet as a result of a decade of steady decline in the defense budget, much of the activity sur-

rounding what budget authority is available will involve how to ramp up and maintain adequate spending for force modernization (to provide systems needed for potential future conflicts) while maintaining acceptable present and future force structure (White, 1996). Acquisition reform and technology will play a significant role in how we acquire new weapon systems for this modernization, and initiatives such as clear identification of DoD core capabilities and the transfer of specialized military technology to the civilian sector will enhance the efficiency and effectiveness in both the military and commercial industrial bases.

Most recently, the Chairman of the Joint Chiefs of Staff published *Joint Vision 2010* (1996), his template for the operational evolution of the Armed Forces, which acknowledges that technologically superior equipment has been critical to the success of our forces in combat. We will need a

Roland D. Kankey (Ph.D., Ohio State University) is head of the Department of Graduate Acquisition Management within the Graduate School of Logistics and Acquisition Management. Dr. Kankey came to AFIT in 1977 following service as a management analyst at Rome Air Development Center, Chief of Management Analysis at Osan Air Base (Korea), and a management analyst and cost analyst at HQ USAF. An expert in cost analysis, Kankey served on the faculty for 13 years prior to assuming his responsibilities as department head. He is also a colonel in the Air Force Reserve, assigned to the Aeronautical Systems Center.

Jan P. Muczyk (D.B.A., University of Maryland) is the dean of the Graduate School of Logistics and Acquisition Management at the Air Force Institute of Technology. Before coming to AFIT in 1995, Professor Muczyk spent 22 years at Cleveland State University. He served in a number of significant assignments there including Interim Dean of the College of Business Administration, Senior Vice President for Resource Planning and Campus Operations, and Executive Assistant to the President and Associate Provost.

Col. Neal M. Ely (Ph.D., Texas A&M University) is the dean of the School of Systems and Logistics at the Air Force Institute of Technology. Previously he was associate dean of the Graduate School of Logistics and Acquisition Management. He has served in a variety of logistics and acquisition jobs prior to his arrival at AFIT in 1995. These include assignments as Deputy Director for the National Missile Defense Readiness Program at the Ballistic Missile Defense Organization; Deputy Director for Strategic Defense Initiative Logistics at Space Systems Division; and Program Manager for the Ground Launched Cruise Missile's depot, the European Repair Facility.

responsive research, development, and acquisition process to properly incorporate these new technologies. The need to overcome bureaucratic inertia, to change the way we do business, is cited as a requirement for future military success (LaBerge, 1996). It is well understood that education is one of the few acceptable methods to overcome inertia and change people's behavior. Our acquisition corps must be intellectually capable, well educated and trained, and be able to create an acquisition process to match the rapidly developing acquisition reform initiatives and legislation, as well as the emerging industrial base and system requirements of the future. In this future, dramatic changes will be wrought by technology: changes in our weapons systems, changes in our acquisition processes, changes in our information systems and information management, and changes in our logistics. As indicated in *Global Engagement*, our core competencies are the combination of professional knowledge, airpower expertise, and technological know-how that produces superior military capabilities (Secretary of the Air Force, 1996). Weapons system acquisition specialists will be key to incorporation of modern and developing technologies into operational weapon systems and the acquisition of these systems at affordable prices.

Acquisition functions will not be exempt from increased "right-sizing" and budgetary pressures as we attempt to balance support for the current and future warfighter with achievement of a leaner infrastructure. In addition, activities that occur away from the flightline will be closely scrutinized for civilianization, privatization, and outsourcing. The impact of all this will create changes in the size

and composition of the force, as well as in certain activities performed by remaining personnel. The mission of the Air Force, although it may appear to look different, will endure or perhaps even grow. Therefore, a smaller number of individuals will be expected to perform a larger number and greater variety of tasks and duties, and they will have less time to prepare for them.

"The need to overcome bureaucratic inertia, to change the way we do business, is cited as a requirement for future military success" (LaBerge, 1996).

A pressing need will exist for a force multiplier to help ensure our future success, both on and off the battlefield. This will be especially true for the rapidly evolving acquisition career field to help those in it become "the world's smartest buyers." Those responsible for acquiring and sustaining next-generation systems will need the intellectual acumen to "name that tune" after hearing just two or three notes. This article will discuss graduate education as a component of the force multiplier, and the need for appropriate focus in graduate education.

EDUCATION AND TECHNOLOGY ARE FORCE MULTIPLIERS

The most effective force multiplier is really a multivariate equation consisting of an able, motivated, and well-led workforce with appropriate training and education, and supported by state-of-the-art technology (Muczyk & Hastings,

1985). A small force leveraged by the above-mentioned enabling factors can defeat a much larger force that lacks one or more of the aforementioned elements. The Israeli experience since 1947 and the U.S.-Coalition defeat of a larger Iraqi force in the Persian Gulf War constitute two excellent examples of the power of the force multiplier equation.

The concept of education as a “force multiplier” has broad general applicabil-

“...it is the rapid transformation of innovation into products and services through ‘management’ technology that provides the competitive edge in the marketplace.”

ity and is not unique to just the operational military. For instance, an analogy can be drawn between the future need for this force multiplier by the Air Force (including its

acquisition function), and the need for a similar force multiplier in the private sector, if it is to remain healthy and competitive in the future. Simply put, success for both will depend on a qualitative rather than a quantitative edge. The Air Force is moving to a smaller, higher technology force, where success will be a result of qualitative rather than quantitative factors.

On the economic front, the United States cannot compete with China, India, Indonesia, Mexico, and other developing nations as far as labor-intensive industries are concerned (Higgins, 1991). If the United States is to enjoy a promising economic future, it must concentrate on high-technology, communications-oriented, knowledge-intensive industries. These industries require a well-educated, technical workforce (i.e., the force multiplier).

Without this, the nation will lack a competitive edge, and will wind up exporting its wealth to more productive nations (Dunham & Pierce, 1989). This is why so many successful companies emphasize quality education through reimbursement programs. This creates a powerful win-win situation for the company, its employees, and its stockholders. This relationship is recognized and understood within the private sector, and that is why individuals who have a quality technical education are doing better than ever before, while those who do not are losing ground (Howard, 1995).

THE SALIENCY OF MANAGEMENT TECHNOLOGY

Typically, the term *technology* conjures up the realm of Thomas Edison and his lab—that is to say, “physical” technology. Yet there is another technology that is becoming even more important, and that is “management” technology. By this we mean the organizational patterns and management systems that society develops to administer key institutions. In light of the difficulty of protecting physical technology, international patent agreements notwithstanding, it is the rapid transformation of innovation into products and services through “management” technology that provides the competitive edge in the marketplace. Japan’s economic miracle can be largely attributed to its superior management technology, which creates the illusion that the Japanese are more innovative on the physical technology frontier than they actually are (Muczyk & Hastings, 1985). In other words, leading-

edge management technology makes it possible to exploit physical technology and provide the necessary cycle time advantage (Muczyk, 1990; LaBerge, 1996; Clubb, 1996).

On the military front, we simply must come to terms with the reality that multinational and transnational corporations produce most of the technology, and practically anyone can obtain it either directly or through third parties. Once the technological genie is released, no amount of secrecy and effort can put it back in the bottle. Therefore, quickly transforming available technology through the most efficient management systems and organizational patterns into superior weapon systems is paramount. The importance of management technology is further highlighted by the necessity to obtain the biggest “bang for the buck” in the systems we are acquiring.

GENERIC VERSUS FOCUSED EDUCATION

On the educational front, the value of focused versus generic graduate education is being hotly debated not only by the private sector, but also by the military (Air Force Institute of Technology [AFIT], 1996).² To be certain, the value added of focused education is quite elusive and difficult to quantify. Some examples are in order. There is an abundance of successful flag officers who are products of undergraduate and graduate civilian programs. Does that imply that the more expensive military academies are a waste of taxpayers’ funds? Moreover, most corporate executives receive their degrees from public universities, and not all of the degrees are in business administration.

Should parents stop sending their offspring to the more expensive private institutions, and should we discourage students from attending business schools? In like manner, one could point to numerous successful military logisticians who obtained their graduate education in civilian institutions. Thus, the central question becomes: Does

“On the military front, we simply must come to terms with the reality that multinational and transnational corporations produce most of the technology, and practically anyone can obtain it either directly or through third parties.”

the promotion rate in the world of work constitute the only or the best criterion for evaluating education? We think not, and more will be said on this point later. Since it is in vogue to look to the private sector for “best practices,” we shall oblige.

FOCUSED GRADUATE EDUCATION AS A BEST PRACTICE

Historically, U.S. firms relied on generic education. The industry- and company-specific knowledge and practices were to be obtained through on-the-job experience and the training provided by the company through a variety of continuing education instrumentalities. Even business schools were expected to provide only the knowledge and practices that were common across organizations; while everything else was the responsibility of the employer. The “big six” accounting firms provide a superb example of that model through their training centers that offer a comprehensive catalog of courses that prepare young people who already

possess generic accounting degrees to become public auditors, tax specialists, or consultants. Certainly, there have been exceptions all along, with the best example being the General Motors Institute, which provided focused degrees for General Motors employees.

More recently, though, many U.S. corporations have concluded that focused education is the best business practice, even though initially it is more expensive, and are resorting to teaming arrangements with civilian graduate schools in order to tailor management programs to the spe-

The ability to tackle subjects of immediate relevance in a direct manner holds much appeal to most managers, regardless of nationality or geography (Bradshaw, 1997; Griffith, 1997).

cific needs of their organization. This has compelled a number of business schools to move out of their ivory towers to forge partnerships with corporations, resulting in multifac-

eted, long-lasting, and strategic alliances that fuse business practice and business education. A recent report estimates that companies with management education and training divisions called colleges, institutes or universities increased from 400 to more than 1,000 between 1988 and 1995 (Hoffman, 1997; "The Corporate University Boom," 1996; "Corporate Universities Grow in Stature," 1997). Among the best known are Motorola University and the MBA program offered by the Arthur D. Little School of Management.

The aforementioned trend is evident abroad as well, since international executives also believe that focused education

makes a larger and more immediate impact on the organization, because it deals with the company's specific problems, solutions, opportunities, and threats. The ability to tackle subjects of immediate relevance in a direct manner holds much appeal to most managers, regardless of nationality or geography (Bradshaw, 1997; Griffith, 1997). Likewise, teaming arrangements between a private firm and an educational institution permit responsiveness to the ever-changing needs of the firm, thereby providing a competitive edge.

A 1996 survey of organizations participating in focused education programs revealed that the impetus provided by rapid change is largely responsible for the customization trend, with the desire to align education with an organization's goals, to spread organizational culture, and to enhance the employability of organizational members ("The Corporate University Boom," 1996). The same survey administered in 1997 produced the following list of benefits from focused education: 1) enhanced job performance (37 percent); 2) communication of mission/vision and values (31 percent); 3) development of a world-class leadership program (24 percent); 4) establishment of a systematized education process (18 percent); and 5) the educational programs as an agent of change for the organization (13 percent) ("Corporate Universities Grow," 1997). It is interesting to note that in the latest survey a bottom-line impact was cited most frequently as the most valuable contribution of focused education.

ORGANIZATIONAL CULTURE AS AN IMPORTANT PERFORMANCE VARIABLE

An increasing number of executives are recognizing the importance of organizational culture, and are expending significant resources to create and maintain a culture that reinforces organizational goals and objectives. Focused education is viewed by certain executives as a more effective vehicle for propagating a desired culture than is generic education, and for good reason. Putting a significant number of members of the same organization through the same intense, extended experience not only inculcates shared values, but reinforces them as well. After all, shared values are the stuff of which culture is made.

The Air Force's recognition of the importance of organizational culture played an important role in its creation of the new Air and Space Basic Course. Additionally, now that the Continental United States (CONUS) C-130 community and operational support airlift have been reassigned to the Air Mobility Command (AMC), the need for the development and growth of an AMC culture has been accentuated. One of the vehicles to accomplish this goal is through the AFIT Master of Air Mobility Degree at the Air Mobility Warfare Center, Fort Dix, NJ, which is embedded in the Advanced Study of Air Mobility Program (Larsen, 1997).

THE DEFENSE DEPARTMENT ANALOGY

For more than 50 years, the U.S. military has relied on both above-mentioned models. Some officers were sent to civilian universities for generic degrees. These

officers were then focused through professional continuing education (PCE) courses as well as through on-the-job experience. Others were sent to organic graduate schools—AFIT and the Naval Post Graduate School (NPS), with reduced subsequent PCE obligations. The Army did not operate its own organic graduate school but utilized both AFIT and NPS, and for certain programs, such as Financial Management, it partnered with a civilian university. One could even

“Focused education is viewed by certain executives as a more effective vehicle for propagating a desired culture than is generic education...”

make a cogent case that educational diversity contributed to the preeminence of our armed forces. The rationale for this dichotomy was straightforward. In those areas where the differences between civilian and military applications were small, a generic degree was acceptable. Otherwise, an organic degree was preferred.

Military establishments of other nations also rely on organic education. One of the better known is the United Kingdom Ministry of Defense Graduate School at Portsmouth. Interestingly, the Graduate School of Logistics and Acquisition Management at AFIT provides not only a model for some of our allies, but also the “seed corn.” That is, certain countries send officers to AFIT, who, after graduation, go back as instructors and administrators of their own organic schools. In addition, they use many of the course materials to which they have been exposed at AFIT. Brazil serves as the best example.

THE NEW ORDER

Since the disintegration of the Soviet Empire, practically everything has become budget driven and the “80 percent solution” is acceptable (i.e., since the last 20 percent of performance is the most difficult and expensive to obtain, in the absence of a clear and present danger, 80 percent of performance is good enough). Few would argue that an organic graduate school adds value. The crux of the debate, however, revolves around the question: Does the value added justify the greater cost?

We need to be quite candid for the moment. Using promotion rates as a proxy measure of the value of focused organic versus generic civilian education is hazardous indeed, because the nexus between

“Using promotion rates as a proxy measure of the value of focused organic versus generic civilian education is hazardous indeed...”

promotion rates and contribution of organizational members is based on a considerable leap of faith. On the other hand, alternative criteria cannot be

defended with incontrovertible evidence either. Let us illustrate with examples close to home. We have been assured that the success of the Air Force program known as “lean logistics” was made possible by AFIT graduates, and not necessarily by the highest ranking ones. Yet, these officers undoubtedly had the same promotion rates as their counterparts with graduate degrees from civilian institutions. Time and time again, we are assured by customers that AFIT graduates do not require a learning curve to speak of, as do their counterparts

from civilian institutions. Also, individuals proclaim publicly that hiring AFIT graduates is the best business practice they know of. Yet, organic graduate education, for better or for worse, stands or falls on the value that its customers and corporate leadership place on five characteristics inherent in organic graduate education: 1) a focused curriculum, 2) relevant research, 3) responsiveness to customer needs, 4) mission-ready graduates, and 5) enhanced assimilation of organizational culture.

Should focused graduate education be the best business practice within the Air Force? To begin to answer this question, we must first discuss the overall requirement for graduate education for the Air Force. As noted previously, the Air Force and DoD are moving into a future defined not only by evolutionary forces but also by a revolution in military affairs; and acquisition reform, “right-sizing,” funding availability, privatization, out-sourcing, lease versus buy decisions, and mission issues will all play roles in this dynamic environment. As discussed earlier, a smaller Air Force will require a force multiplier to achieve its competitive advantage in much the same way as the private sector, and largely for the same reasons—namely, a highly educated technical force structure. In the current downsizing environment, we must be on guard when applying the concept of proportional cuts to education. Under the proportionality argument, since the Air Force has become smaller, the number of advanced academic degree (AAD) requirements should shrink proportionately. This is a specious argument and, in fact, quite the opposite is the case. Just as a higher proportion of the civilian workforce in a high-technology, knowledge-based, and

communications-oriented economy needs focused quality graduate degrees, so do the men and women of tomorrow's Air Force.

This observation applies not just to the select few deemed to be the future leaders who must chart our course, but to personnel at all levels charged with the day-to-day operation of a high-tech, high tempo Air Force, including those who will be acquiring and sustaining its systems. The devil is typically in the implementation, and the individuals who do the actual implementing are found at all levels of the organization. If key people at all levels lack the appropriate education, poor implementation will frustrate the best laid plans (such as decreasing cycle time [Clubb, 1996], or elevating the importance of a bidder's past performance as a source selection criterion) every time.

In today's (and tomorrow's) fast-paced, fluid environment, the Air Force and DoD will need more people with the skills and tools they accrue from a focused graduate education. These include not only the technical and informational skills related to one's major course of study, but the analytical, problem solving, and rational thinking abilities one develops as part of a graduate education. These tools are especially important because they can be applied throughout a career, and to a broad array of problems and situations. Education, after all, is what is left after all the job-specific knowledge and skills are removed. A smaller Air Force needs more advanced, quality technical degrees because it no longer has large numbers of people, inventory, and an abundance of funds to throw at problems. The remaining folks will have to solve unusual and complex problems with brain power. That

is why the Air Force Scientific Advisory Board (AFSAB), in *New World Vistas*, recognized this reality and specifically offered AFIT as an example of a source of Air Force relevant quality graduate technical degrees (AFSAB, 1995). Given the resource-constrained environment, with its manpower reductions and up-tempo implications, the Air Force can no longer afford a square checking exercise in graduate education.

All of us know there are quality civilian institutions, and where "one size fits all," they should be utilized—and they are.^{3,4} But civilian institutions are not interested in certain technologies because they lack large-scale commercial applications. Furthermore, while many of the DoD acquisition orders deal with

"In today's (and tomorrow's) fast-paced, fluid environment, the Air Force and DoD will need more people with the skills and tools they accrue from a focused graduate education."

primarily commercial goods (commodities, office supplies, etc.) to be sure, other subsets are quite different (combat aircraft, munitions, missiles, etc.). Likewise, some of our acquisition goals and a substantial amount of the DoD acquisition environment (especially the legal aspects) are markedly dissimilar from commercial practices, which are the only ones taught at civilian universities. Finally, the "fog and friction" of combat necessitates a tailor-made logistics system (Pagonis & Cruikshank, 1992). We must face the reality that many pure "just-in-time" logistics systems are severely taxed by the Christmas rush and incapacitated by a

United Parcel Service labor stoppage. To quote more fully from *Global Engagement* (1996):

People are at the heart of the Air Force's military capability, and people will continue to be the most important element of the Air Force's success in capitalizing on change. The Air Force of tomorrow and beyond must encourage individuals to be comfortable with uncertainty and willing to make decisions with less than perfect information. Accordingly, our people must understand the doctrine, culture, and competencies of the Air Force as a whole—in addition to mastering their own specialties. Emphasis on creating an Air Force environment that fosters responsiveness and innovation, and rewards adaptability and agility, will be crucial as we move into the early part of the next century.

The qualities and skills cited in the aforementioned quote are needed to create suitable DoD acquisition and logistics systems, processes, and procedures; and they are exactly the attributes provided by the kind of focused graduate degrees offered at AFIT and NPS.

On a broader scale, AFIT's two graduate schools undeniably contribute two of the enabling elements in the force multiplier equation discussed earlier. Certain technologies are of interest principally to the Air Force and the DoD, such as: high-energy lasers, low observable technologies, target recognition, autonomous weapon systems, and unmanned aerial

vehicles. AFIT's School of Engineering offers not only focused curricula in these areas, but also conducts relevant, cutting-edge research on these vital issues. Graduates of these programs are anxious and able to explode out of the starting gate when they arrive at their next assignment.

In the areas of acquisition and logistics, AFIT for years has also provided education and research focused with an Air Force/DoD lens, thereby creating mission-ready graduates. The contributions to management technology include developing improved information resource concepts and systems, and improved management of a weapon system's life cycle, from system acquisition (including acquisition logistics) to operational logistics support.

In addition to the faculty's research streams, over 90 percent of AFIT's thesis research is sponsored by external Air Force and DoD organizations. As noted earlier, this research helps to solve some of the key problems faced by the Air Force as it moves into the next century and produces graduates better able to address additional problems in the future. AFIT's research sponsors have recently estimated that the value of the research they receive is about \$30 million per annum. And fully 80 percent responded that they would have funded this research from other sources had it not been supplied by the AFIT graduate schools.

The Air Force Logistics Management Agency (AFLMA) is the most concentrated locus of AFIT graduates. This assignment permits these young officers to hone analytical skills acquired in graduate school by applying them to some of the most vexing logistics problems facing the Air Force and the DoD. By the time they complete their AFLMA assignment,

these officers are among the most valuable assets that the Air Force possesses.

It is becoming evident that in today's resource-constrained environment, the number one enemy of any military system is cost. Whereas in the past the emphasis was placed on effectiveness, today efficiency is of equal importance. This is particularly true in the field of acquisition, where measures of efficiency such as unit cost and life-cycle cost are key in programmatic decisions. Economy of force, one of the basic principles of warfare, has been cited as one of the justifications for considering different, more efficient, approaches toward acquisition and logistics mission accomplishment (Ely, 1997). The entire concept of cost as an independent variable (CAIV) promotes a push for cost efficiency. But it is management technology that in large measure determines efficiency. In all likelihood, cost pressures will elevate the importance of efficiency as serious attempts are made to balance the federal budget. It will be management technology, focused on the unique aspects and requirements of the Air Force, that determines how successfully this branch of the services executes new initiatives such as acquisition reform, lean logistics, and quality management.

RESPONSIVENESS TO AIR FORCE NEEDS

As the nature of how the Air Force accomplishes its mission changes, requirements for new areas and subjects for Air Force-focused graduate education will appear; and the graduate education process for the Air Force must respond to these new requirements. It will be of paramount importance that these changes be made in a

timely and responsive manner. As organic schools, AFIT and NPS have always considered responsiveness and flexibility to be core competencies.

As an example, the Graduate School of Logistics and Acquisition Management has recently demonstrated responsiveness by implementing a new graduate program that serves as a

prototype for how the changing graduate education needs of the Air Force could be met. This new program, the Master of Air Mo-

"It is becoming evident that in today's resource-constrained environment, the number one enemy of any military system is cost."

bility, was developed for the AMC in conjunction with the Advanced Studies of Air Mobility program at Fort Dix, NJ. The competing requirements for focused graduate education in air mobility, and the need to keep the students involved with the mobility mission, required the use of mixed instructional delivery modes. Many of AFIT's specialized courses are offered on-site at Fort Dix. AFIT instructors fly to Fort Dix to teach courses there on an accelerated basis, while some courses are taught at the AFIT campus and delivered to the Air Mobility Warfare Center through satellite hookup. The AFIT library is connected with the Air Mobility Warfare Center as well. This program was initially requested by the Commander of AMC in September 1994, and implemented in full as an accredited master's program in March 1995.^{2,4}

As an important side note, every student nominated for the first class by AMC already possessed a master's degree in a different discipline. In the future, the re-

duced manning, increased operational tempo, and (for those of us in acquisition) downsized program offices will require that students spend less time in a traditional campus environment than their predecessors did. Educational systems must

“At the moment, looking to best business practices to achieve significant efficiencies within the DoD is the order of the day.”

respond to these changing needs by taking education to the student. Clearly, technology will modify the delivery mode of education and

training by making distance learning much more practical and effective than it is today, thereby decreasing the time students spend away from their primary duty. Within the Air Force, AFIT is a leader in pioneering distance learning, and we are actively considering ways to reduce the length of the in-residence portion of our masters degrees.

IN THE FINAL ANALYSIS

Perhaps the ultimate tradeoff to be considered is strictly cost versus value. Any graduate school that produces mission-ready graduates by focusing its curricula and research on customers' needs and by being responsive as part of its mission (consultancy is included in AFIT's mission) will be more expensive. *Ipso facto*, any organization (including the Air Force) would have to pay a premium (or provide a subsidy) to a civilian institution in return for receiving the same responsiveness, attention, and focused education that AFIT currently provides.

AFIT's Board of Visitors determined that the investment the Air Force makes in graduate education at AFIT (\$13.4 million per year) provides an impressive return in terms of mission-ready graduates, as well as focused and responsive research and consultancy. The Board of Visitors report goes on to say: “AFIT provides an array of values that benefit its students, the Air Force and, ultimately, the entire nation.” The report concludes with the following remarks: “While there is a premium to be paid to maintain AFIT, the Board of Visitors is unanimous in its belief that there is a richness to the return on investment that cannot be achieved at more traditional civilian educational institutions” (“Report of the AFIT Board of Visitors,” 1996).³

At the moment, looking to best business practices to achieve significant efficiencies within the DoD is the order of the day. It would be ironic indeed to abandon focused graduate education at a time when it appears that it is being recognized around the globe by the private sector as the best business practice.

SUMMARY

The acquisition reform initiatives and the Air Force Lightning Bolts are only the beginning—the first chapter in a long saga. To successfully change our acquisition processes to meet our future needs, DoD and the Air Force must produce not only the strategic thinkers in this critical arena who continuously improve existing management technology as well as add to the extant storehouse, but those who are able to implement these “best laid plans.”

In an era of ever-shrinking budget authority, the success of force modernization and acquisition reforms will depend on those who can master the complexity and dynamics of the rapidly changing and unique military technological and acquisition environment. Given the differences between civilian and military logistics and acquisition, and the emphasis on efficiency as well as effectiveness, a focused, responsive, and quality graduate education guarantees that the Air Force and the DoD will receive a constant stream of officers and government civilians armed with the strategic mental acuity to solve some of the most vexing problems in the future.

With the disintegration of the Soviet Union, no nation can compete with the United States across the board as far as physical technology is concerned. It is

imperative that such is also the case vis-à-vis management technology, for without it, it is not possible to exploit the full range of physical technologies that a nation possesses. Most would agree that institutions and organizations vested with public interest should be directed by doctrine rather than personality or financial expediency. The evolution of mankind has taken such a path that it is now the size of the brain that constitutes the competitive edge and not the size of the club. But this brain must be honed through appropriate education and training. Now, more than ever, the vital education element of the force multiplier equation must continue to be incorporated as a fundamental tenet of Air Force and DoD doctrine. The consequences of not doing it may very well be unacceptable.

REFERENCES

- Bradshaw, D. (1997, March 20). New challenges in a brave new world. *Financial Times*, p. 9.
- Chairman of the Joint Chiefs of Staff. (1996). *Joint vision 2010*. Washington, DC: Author.
- Clubb, G. D. (1996, Fall). Blinding speed equals competitive advantage. *Acquisition Review Quarterly*, 175–180.
- Corporate universities grow in stature. (1997, Summer). American Assembly of Collegiate Schools of Business *Newsline*.
- The corporate university boom: B-school threat or opportunity? (1996, Spring). American Assembly of Collegiate Schools of Business *Newsline*. (The International Association for Management Education, St. Louis, MO.)
- Department of the Air Force. (1992, March). *Air Force manual 1-1, Basic aerospace doctrine*. Washington, DC: Author.
- Dunham, R. B., & Pierce, J. J. L. (1989). *Management*. Glenview, IL: Scott, Foresman and Company.
- Ely, R. (1997, July). Accounting and accountability. *Leading Edge*, 8.
- Fogleman, R. R. (1996, April 23). *The use of force in the post-cold war environment*. Speech presented to the World Affairs Council of Orange County, CA.
- Griffith, V. (1997, March 20). Short, sharp, and specific. *Financial Times*, p. 10.
- Higgins, J. H. (1991). *The management challenge*. Macmillan: New York.
- Hoffman, E. (1997, June). New school ties. *U.S. Airway Magazine*, 6–19.
- Howard, A. (Ed.). (1995). *The changing nature of work*. Jossey-Bass: San Francisco.
- LaBerge, W. B. (1996, Fall). Cycle time—a military imperative as well. *Acquisition Review Quarterly*, 79–82.
- Larsen, R. J. (1997, July-August). Air mobility culture: A reexamination. *The Mobility Forum*, 9–12.
- Muczyk, J. P. (1990, April 21). Has the U.S. lost its edge? Yes and no. *The Plain Dealer*, p. 5-B.
- Muczyk, J. P., & Hastings, R. B. (1985, July-August). In defense of enlightened hardball management. *Business Horizons*.
- Pagonis, W. G., with Cruikshank, J. L. (1992). *Moving mountains: Lessons in leadership and logistics from the Gulf War*. Boston: Harvard Business School Press.
- Report of the Air Force Institute of Technology Board of Visitors. (1996, March 3–5). Washington, DC: AFIT.

Secretary of the Air Force. (1996, Fall).
Global engagement: *A vision for the
21st century Air Force*. Washington,
DC: Author.

United States Air Force Scientific Advi-
sory Board. (1995, December). *New
world vistas*, Washington, DC: Author.

White, J. (1996, April 4). *Modernization
hinges on fiscal reality*. Speech pre-
sented to the Navy League Sea-Air-
Space Exposition, Washington, DC.

ENDNOTES

1. Culled from numerous speeches given by the Secretary and Chief of Staff of the Air Force during the first half of 1996.
2. Unlike the Air Force, which is debating the future of the graduate education at AFIT, the U.S. Navy considers the Naval Postgraduate School a “flagship” educational institution, along side the Naval Academy and the Naval War College, to be preserved as a valuable asset.
3. Given the fixed costs associated with launching a new program, before a civilian university would consider such a decision, it would require a guarantee of a sizable number of students for an extended period of time.
4. Typically, it takes two years or more for a new program to be debated and approved by all the curriculum committees, the faculty senate, and for public universities, the Board of Regents or the Department of Education.